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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,703	06/25/2003	Hector Cotal	PD 02-0304/11881 (21797-0)	3427
26587	7590	10/04/2006	EXAMINER	
MCNEES, WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-1166			FICK, ANTHONY D	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/603,703

Applicant(s)

COTAL ET AL.

Examiner

Anthony Fick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-12 and 14-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12 and 14-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 through 4, 7, 8 and 18 through 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. (U.S. 6,291,761) in view of Mowles (U.S.P.G.Pub 2002/0062858).

Takada discloses a solar cell module, shown in figures 3A, 3B, and 3C. The module comprises a photovoltaic energy source, 303, having a front face and an oppositely disposed back face, the top and bottom of the layer as seen in figure 3B, a frontside array of metallic gridlines, 305, and a busbar structure in electrical continuity with the frontside array comprising an electrical insulator layer, 308, and a metallic busbar layer, 306, which overlies the insulator layer and is in electrical continuity with the frontside array of metallic gridlines (figure 3A, 3B, and 3C and column 17, paragraphs 2 and 6 and column 18, paragraph 1).

Regarding claims 3 and 19, Takada further discloses the photovoltaic energy source comprises more than two layers of semiconductor material (column 17, paragraph 2).

Regarding claim 4, figure 3B further shows a backside metallic electrode, 301, overlying and contacting the back face of the energy source (column 16, paragraph 8).

Regarding claims 8 and 21, figure 3A also shows the insulator layer, 308, extends laterally beyond the metallic busbar, 306.

The differences between Takada and the claims are the requirement of exactly two layers of semiconductor material, and requirements of the insulator layer composition and thickness.

Mowles teaches a high efficiency solar cell produced with inexpensive materials. The photovoltaic layer comprises two semiconductor layers to produce a p/n junction (paragraph 0052). Mowles further teaches the use of an insulating layer to electrically isolate the device. The insulating layer is made of silicon dioxide and has a thickness of 0.5 micrometers (paragraph 0049).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the material and thickness of the insulating layer of Mowles within the device of Takada because silicon dioxide has low cost, high availability of source chemicals and advanced technology of its deposition (Mowles paragraph 0049). Also the thickness is optimized for the specific application of an insulating layer and needs only to be sufficiently thick enough to be electrically insulating and pin-hole free (Mowles paragraph 0049). Thus the thickness of Mowles provides a low cost insulating layer free of defects that can corrupt the insulating properties of the layer. Therefore the combination meets claims 1, 3, 4, 7, 8 and 18 through 21.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to utilize the semiconductor materials and two layer

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structure of Mowles within the device of Takada because the material is low cost, efficiently absorbs the solar spectrum, efficiently transports the photogenerated carriers and provides the abrupt p/n junctions needed for an efficient photovoltaic device (Mowles paragraph 0052). Further the amorphous silicon utilized within the device of Takada has a short lifetime, difficult production and increased cost over the material of Mowles (Mowles paragraph 0012). Because both Takada and Mowles are concerned with solar cells, one would have a reasonable expectation of success from the combination. Thus the combination meets claim 2.

3. Claims 9 through 11, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada in view of Mowles as applied to claims 1 through 4, 7, 8 and 18 through 21 above, and further in view of Kaplow et al. (U.S. 4,242,580).

The disclosure of Takada in view of Mowles is as stated above for claims 1 through 4, 7, 8 and 18 through 21.

The difference between Takada and claims 9 through 11, 22 and 23 is the requirement of a solar concentrator of specific concentration ratio.

Kaplow teaches a solar radiation collection apparatus. The apparatus directs highly concentrated solar radiation upon a device such as a photovoltaic cell (abstract). These concentrations exceed 100 suns and especially in the range of 500 or more suns (column 1, paragraph 1). Figure 1 shows the apparatus concentrates the solar energy toward the front face of solar cell 10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the solar concentrator of Kaplow with the device of

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Takada in view of Mowles because the device allows the response of the cell to sun exposure to always be a maximum (Kaplow column 6, paragraph 2) and provides highly concentrated solar radiation to the solar cell (Kaplow column 2, paragraph 10).

Because Kaplow and Takada in view of Mowles are concerned with photovoltaic cells, one would have a reasonable expectation of success from the combination. Thus the combination meets claims 9 through 11, 22 and 23.

4. Claims 12 and 14 through 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. (U.S. 6,291,761) in view of Mowles (U.S.P.G.Pub 2002/0062858) and further in view of Kaplow et al. (U.S. 4,242,580).

Takada discloses a solar cell module, shown in figures 3A, 3B, and 3C. The module comprises a photovoltaic energy source, 303, having a front face and an oppositely disposed back face, the top and bottom of the layer as seen in figure 3B, a frontside array of metallic gridlines, 305, and a busbar structure in electrical continuity with the frontside array comprising an electrical insulator layer, 308, and a metallic busbar layer, 306, which overlies the insulator layer and is in electrical continuity with the frontside array of metallic gridlines (figure 3A, 3B, and 3C and column 17, paragraphs 2 and 6 and column 18, paragraph 1).

Regarding claims 3 and 19, Takada further discloses the photovoltaic energy source comprises more than two layers of semiconductor material (column 17, paragraph 2).

Regarding claim 16, figure 3A also shows the insulator layer, 308, extends laterally beyond the metallic busbar, 306.

The differences between Takada and the claims are the requirements of the insulator layer composition and thickness and the requirement of a solar concentrator of specific concentration ratio.

Mowles teaches a high efficiency solar cell produced with inexpensive materials. The photovoltaic layer comprises two semiconductor layers to produce a p/n junction (paragraph 0052). Mowles further teaches the use of an insulating layer to electrically isolate the device. The insulating layer is made of silicon dioxide and has a thickness of 0.5 micrometers (paragraph 0049).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the material and thickness of the insulating layer of Mowles within the device of Takada because silicon dioxide has low cost, high availability of source chemicals and advanced technology of its deposition (Mowles paragraph 0049). Also the thickness is optimized for the specific application of an insulating layer and needs only to be sufficiently thick enough to be electrically insulating and pin-hole free (Mowles paragraph 0049). Thus the thickness of Mowles provides a low cost insulating layer free of defects that can corrupt the insulating properties of the layer

Kaplow teaches a solar radiation collection apparatus. The apparatus directs highly concentrated solar radiation upon a device such as a photovoltaic cell (abstract). These concentrations exceed 100 suns and especially in the range of 500 or more suns (column 1, paragraph 1). Figure 1 shows the apparatus concentrates the solar energy toward the front face of solar cell 10.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the solar concentrator of Kaplow with the device of Takada in view of Mowles because the device allows the response of the cell to sun exposure to always be a maximum (Kaplow column 6, paragraph 2) and provides highly concentrated solar radiation to the solar cell (Kaplow column 2, paragraph 10). Because Kaplow and Takada in view of Mowles are concerned with photovoltaic cells, one would have a reasonable expectation of success from the combination. Thus the combination meets claims 12 and 14 through 17.

Double Patenting

5. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

6. Applicant is advised that should claim 1 be found allowable, claim 20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

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7. Applicant's arguments with respect to claims 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed July 18, 2006 have been fully considered but they are not persuasive. Applicant argues that the combination of Mowles with Takada is improper because the insulating layer in Mowles is not the same as the polyimide tape in Takada, there is no motivation to combine the references, and there is no expectation of success. The examiner respectfully disagrees. The layer in Mowles is an insulating layer within a photovoltaic cell, the same exact function and structure as the insulating layer within Takada. Further, Mowles provides several reasons for utilizing the oxide as the insulation material over other insulation materials. Mowles states that silicon dioxide has a low cost, high availability of source chemicals and advanced technology of its deposition (Mowles paragraph 0049). Also the thickness is optimized for the specific application of an insulating layer and needs only to be sufficiently thick enough to be electrically insulating and pin-hole free (Mowles paragraph 0049). Thus the thickness of Mowles provides a low cost insulating layer free of defects that can corrupt the insulating properties of the layer. Also due to the fact that the insulation layer is utilized within a solar cell already, the expectation of success as an insulation layer is high. Last while the device of Mowles does not have an insulating layer underneath a busbar, Mowles does not specifically teach that the insulating layer cannot be used under a busbar or that any insulation layer cannot be used under a busbar. Thus Mowles does not teach away from the combination.

Conclusion

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

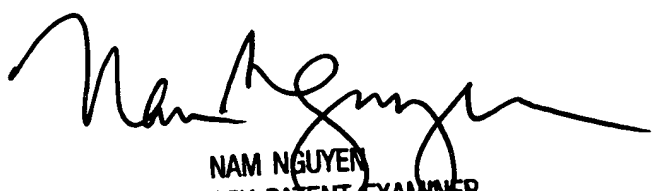
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday thru Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick *ADF*
AU 1753
October 2, 2006


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